Safe Drinking Water Partnerships: Microbiology at the Technical Support Center of the Office of Ground Water and Drinking Water

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Keywords: TSC, *Aeromonas*, enteric viruses, *Cryptosporidium*, toxic algae

The Office of Ground Water and Drinking Water (OGWDW) is responsible for developing and directing national policy for safeguarding national drinking water supplies from microbial and chemical contaminants. The OGWDW performs this task by developing and implementing regulations that ensure safe drinking water for consumers. The TSC of the OGWDW provides support to regulation development, regulation implementation, and analytical methods development and evaluation. These objectives are achieved by frequent collaborations between several U.S. Environmental Protection Agency (U.S. EPA) offices, water utilities, and academic institutions. Listed below are some of the collaborative efforts by the microbiology group of the TSC.

One of the key regulatory support activities of the TSC entails collection of contaminant occurrence information. An *Aeromonas* bacteria occurrence survey was conducted by the TSC in collaboration with water utilities and academic institutions. The isolates of *Aeromonas* obtained in the survey were identified by biochemical and molecular methods in a collaborative effort with the Office of Research and Development (ORD). The two offices further collaborated to identify potentially virulent strains of *Aeromonas* using molecular methods, and these strains are being further characterized in a mouse model.

Concerns regarding the presence of algal toxins in drinking water are also a primary focus of the partnership activities of the TSC. As such, the TSC conducted a small survey of algal toxins (e.g., microcystins, anatoxins) in drinking water and participated in developing workshops for toxic algae and use of microarray technology. The toxic algae workshops were aimed at prioritizing toxic algae and developing guidelines, while the microarray workshop was aimed at evaluating the feasibility of using microarray technology for detection and screening of waterborne pathogens.

The Long Term 2 Enhanced Surface Water Treatment Rule (LT2) was proposed in 2004 to supplement existing regulation to reduce disease incidence associated with *Cryptosporidium* and other pathogenic microorganisms in drinking water. In support of this rule, the TSC collaborates with stakeholders nationwide for enhancing analytical methods and laboratory capacities. Enteric viruses have been shown to cause several waterborne outbreaks each year. However, there are no methods available that detect viral infectivity for all waterborne enteric viruses. To address this important public health issue, collaborative efforts with the National Exposure

Research Laboratory (NERL) are underway to develop a molecular method to distinguish between infectious and noninfectious viruses in water sources.

The TSC participated in toxic algae risk assessment studies in collaboration with the National Center for Environmental Assessment (NCEA) and the Office of Science and Technology (OST).